

Klondyke Tailings

Boundaries:

The site is located on the north bank of Aravaipa Creek, approximately 4.5 miles upstream of the Aravaipa Canyon Wilderness Area. The boundaries of this site are irregular. The site is comprised of two piles of mine tailings, the soil between and adjacent to these piles, and the area approximately 50 feet into the stream bed of Aravaipa Creek, directly adjacent to the tailings piles. The site is bounded to the east and north by the Klondyke county road.

Site History:

- From the 1870s through the 1950s, lead, zinc, copper, silver, and gold mining was conducted in the Klondyke area of the Aravaipa Mining District.
- In 1948, the Athletic Mining Company constructed a flotation mill next to Aravaipa Creek, which operated until about 1958, which generated, in part, the tailings at the site. Other possible sources are being investigated.
- In March 1993, a complaint concerning erosion and runoff from the tailings pile was filed with the Arizona Department of Environmental Quality (ADEQ), and an investigation began. The results of that investigation revealed high levels of lead and arsenic in the tailings piles and surrounding soils and acidic runoff emanating from the site.
- In October 1997, ADEQ received an Arizona Water Protection Fund Grant to conduct a preliminary investigation, compile existing data, and evaluate possible remedial alternatives at the site. The U.S. Fish & Wildlife Service conducted fish tissue sampling and analysis of fish in Aravaipa Creek at two sites within Nature Conservancy property. The results of that investigation revealed elevated levels of lead and other metals in fish tissue, though not at levels that threatened native fish species.
- In September 1998, the site was placed on WQARF Registry with an eligibility and evaluation score of 69 out of a possible 120.
- In 1999 ADEQ contracted with URS Corp. to conduct the remedial investigation (RI) for the Klondyke Tailings WQARF site.
- In July 2001, 15 private wells in the Klondyke area were sampled. No drinking water standards were exceeded in any of the wells tested. Results indicated very good water quality. In December 2001, samples of tailings were collected and analyzed to assess the long-term potential for generating and releasing acidity and metals from the tailings as a result of storm water runoff. The results of the Phase I investigation indicate high levels of stored acidity in the two tailings piles.

- In 2001-2002, magnetic and electromagnetic geophysical surveys were conducted to identify the possible presence of buried drums, tanks, and piping that may contain contaminants.
- In 2002-2003, aerial photography and topographic mapping were conducted to provide the technical background necessary to conduct a geomorphic and floodplain analysis of the site. The 100-year and the 500-year flood plains were delineated. Soil sampling was conducted for bioavailability testing. The results of that testing indicate a wide range of bioavailability for lead-contaminated soils and tailings and a low level of bioavailability for arsenic in soils and tailings. Biological, archeological and cultural resource surveys were also completed.

Site Status:

- ADEQ's immediate plans are to complete the Early Response Action (ERA) at the site. During the ERA, ADEQ will determine if geophysical targets previously identified during the geophysical survey need to be removed. Further excavation of these targets will aid in the identification of any buried tanks, drums or pipelines requiring removal. During the ERA, a small amount of laboratory reagents still present at the site will be removed. Also during the ERA, ADEQ will conduct minor earth moving repairs such as repairing berms around the tailings piles and correcting drainage problems to contain stormwater runoff on the tailings piles.
- ADEQ will also continue with the RI at the site. The planned activities for the RI include additional soil sampling on the entire site to determine the extent of contamination. The RI also includes sediment sampling in Aravaipa and Laurel Creeks both upstream and downstream of the site. In addition four groundwater monitor wells will be installed at the site to evaluate the impacts, if any, to the groundwater beneath the site.

Site Hydrogeology:

- The site lies adjacent to Aravaipa Creek in the Aravaipa Valley, a broad valley within the Basin and Range physiographic province characterized uplifted fault-block mountains and broad flat valleys. Groundwater is found in unconsolidated (young alluvium) and semi-consolidated (basin fill sediments) alluvial deposits within the valley. Most groundwater is withdrawn from the younger alluvium.
- Wells in the younger alluvium range from about ten to 100 feet (or more) in depth. Wells can yield up to 1200 gallons per minute. Groundwater is shallow along Aravaipa Creek, ranging from about ten to 60 feet below land surface.
- Aravaipa Creek is ephemeral for much of its reaches (upstream of the site), has an intermittent reach starting at the Haby Spring (approximately 4.5 miles upstream of the site), and is ephemeral at the site and downstream of the site for about three to four miles. Perennial flow begins near the Nature Conservancy Preserve, due to a thinning of the younger alluvium where faulting has uplifted semi-consolidated and consolidated basin

fill deposits. Aravaipa Creek is perennial through the Bureau of Land Management (BLM) wilderness area.

Contaminants:

The current contaminants of concern at the site include lead, cadmium, antimony, beryllium, copper, manganese, arsenic, and zinc. Physical evidence and testing of the groundwater and soil in the area indicate that runoff and leaching into Aravaipa Creek from the tailings piles may be occurring, and flooding of the creek could erode contaminated materials into the creek bed. Contaminants of concern at the site may change as new data become available.

Public Health Impact:

The results of a public health assessment conducted by the Arizona Department of Health Services in 1999 suggest that the site does not pose a health risk to nearby residents, campers, swimmers, ATV users or to those who consume fish from Aravaipa Creek.

Community Involvement Activities:

A community advisory board (CAB) has been formed for the site and meets on a regular basis. These meetings are open to the public. The CAB meeting agendas and minutes can be viewed at <http://www.adeq.az.us/environ/waste/sps/reg.html>. Fact sheets are sent to residents in the community involvement area, distributed at the site repositories, at the BLM ranger stations on both ends of Aravaipa Creek.

Information Repositories:

Interested parties can review site information at the ADEQ main office located at 1110 West Washington Street, Phoenix. With 24 hour notice, an appointment to review relating documentation is available Monday through Friday from 8:30 a.m. to 4:30 p.m., at the ADEQ Records Management Center, 1110 W. Washington Street in Phoenix, Arizona. Please contact (602) 771-4380 or (800) 234-5677 to schedule an appointment to review these documents.

Contacts:

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*In Arizona, but outside the Phoenix area, call toll-free at (800) 234-5677.